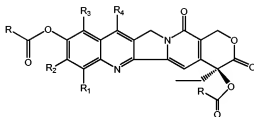


AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

Claims 1-54 (Canceled).

55. (Currently Amended) A di-ester derivative of camptothecin having the following general structure:



wherein

R_1 , R_2 , R_3 , and R_4 , which can be the same or different, are hydrogen, halogen, C_1 - C_{20} alkyl, C_1 - C_8 alkoxy, C_4 - C_{20} aryl or C_1 - C_{20} silyl,

each R can be the same or different and is $[[C_1-C_{30}]]$ C_2-C_{30} alkyl, C_2-C_{22} alkenyl, C_4-C_{30} aryl, $(CH_2)_nOR_5$, $(CH_2)_nSR_5$, $(CH_2)_nNR_5R_6$ or $(CH_2)_nCOR_7$,

wherein,

R_5 and R_6 , which can be the same or different, are C_1 - C_8 alkyl[[$]$,] or C_2-C_6 alkenyl [[or C_4-C_{10} aryl]],

R_7 is hydroxy, C_1 - C_{20} alkyl, C_1 - C_6 alkenyl, C_1 - C_6 alkoxy, C_4 - C_{20} aryl, or NR_8R_9 ,

wherein,

R_8 and R_9 , which can be the same or different, are C_1 - C_6 alkyl,

and n is an integer of 1 to 8,

or a pharmaceutically acceptable salt thereof.

56. (Currently Amended) A di-ester derivative of claim 55 or a salt thereof wherein each R can be the same or different and is $[[C_1-C_{20}]]$ C_2-C_{20} alkyl, C_2-C_6 alkenyl, or C_4-C_{20} aryl.

57. (Previously Presented) A pharmaceutical composition comprising an effective amount of the camptothecin di-ester derivative of claim 55 or a salt thereof and a pharmaceutically acceptable carrier or diluent.

58. (Previously Presented) A pharmaceutical composition comprising an effective amount of the camptothecin di-ester derivative of claim 56 or a salt thereof and a pharmaceutically acceptable carrier or diluent.

59. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 , R_3 , and R_4 is H, and R is $[[C_3-C_{30}]]$ ~~C_2-C_{30}~~ alkyl.

60. (Currently Amended) The di-ester derivative of claim 56, wherein each of R_1 , R_2 , R_3 , and R_4 is H, and R is $[[C_1-C_{20}]]$ ~~C_2-C_{20}~~ alkyl.

61. (Previously Presented) The di-ester derivative of claim 55, wherein each of R_1 , R_2 , R_3 , and R_4 is H, and R is C_2-C_{22} alkenyl.

62. (Previously Presented) The di-ester derivative of claim 56, wherein each of R_1 , R_2 , R_3 , and R_4 is H, and R is C_2-C_6 alkenyl.

63. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 , R_3 and R_4 is H, and R is $(CH_2)_nOR_5$,

wherein,

R_5 is C_1-C_6 alkyl $[[L_1]]$ or C_2-C_6 alkenyl $[[L_1$ or C_4-C_{10} aryl $]]$, and
 n is 1 or 2.

64. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 , R_3 and R_4 is H, and R is $(CH_2)_nSR_5$,

wherein,

R_5 is C_1-C_6 alkyl $[[L_1]]$ or C_2-C_6 alkenyl $[[L_1$ or C_4-C_{10} aryl $]]$, and
 n is 1 or 2.

65. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein each of R_1 , R_2 , R_3 and R_4 is H, and R is $[[[(CH_2)_nNR_5R_6]]$ $(CH_2)_nNR_5R_6$,

wherein,

R₅ and R₆ are independently, C₁–C₆ alkyl[[.]] or C₂–C₆ alkenyl [[, or C₄–C₁₀ aryl]], and n is 1 or 2.

66. (Previously Presented) The di-ester derivative of claim 55, wherein each of R₁, R₂, R₃ and R₄ is H, and R is (CH₂)_nCOR₇,

wherein,

R₇ is hydroxy, C₁–C₆ alkyl, C₂–C₆ alkenyl, or C₄–C₁₀ aryl, and
n is 2 to 4.

67. (Currently Amended) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is [[C₁–C₃₀]] C₂–C₃₀ alkyl.

68. (Currently Amended) The di-ester derivative of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is [[C₁–C₃₀]] C₂–C₂₀ alkyl.

69. (Previously Presented) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂–C₂₂ alkenyl.

70. (Previously Presented) The di-ester derivative of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₂–C₆ alkenyl.

71. (Previously Presented) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₄–C₃₀ aryl.

72. (Previously Presented) The di-ester derivative of claim 56, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is C₄–C₂₀ aryl.

73. (Currently Amended) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nOR₅,

wherein,

R₅ is C₁–C₆ alkyl[[.]] or C₂–C₆ alkenyl [[, or C₄–C₁₀ aryl]], and
n is 1 or 2.

74. (Previously Presented) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is CH₂CH₃, and R is (CH₂)_nSR₅,

wherein,

R₅ is C₁–C₆ alkyl, C₂–C₆ alkenyl, or C₄–C₁₀ aryl, and n is 1 or 2.

75. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein each of R_1 , R_2 and R_3 is H, R_4 is CH_2CH_3 , and R is $(\text{CH}_2)_n\text{NR}_5\text{R}_6$,

wherein,

R_5 and R_6 are independently, $\text{C}_1\text{--C}_6$ alkyl[[,]] or $\text{C}_2\text{--C}_6$ alkenyl [[, or $\text{C}_4\text{--C}_{10}$ aryl]], and n is 1 or 2.

76. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is CH_2CH_3 , and R is $[[\text{CH}_2]_n\text{COR}_7]]$ $(\text{CH}_2)_6\text{COR}_7$,

wherein,

R_7 is hydroxy, $\text{C}_1\text{--C}_6$ alkyl, $\text{C}_2\text{--C}_6$ alkenyl, or $\text{C}_4\text{--C}_{10}$ aryl, and n is 2 to 4.

77. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $[[\text{C}_1\text{--C}_{30}]]$ $\text{C}_2\text{--C}_{30}$ alkyl.

78. (Currently Amended) The di-ester derivative of claim 56, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $[[\text{C}_1\text{--C}_{20}]]$ $\text{C}_2\text{--C}_{20}$ alkyl.

79. (Previously Presented) The di-ester derivative of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $\text{C}_2\text{--C}_{22}$ alkenyl.

80. (Previously Presented) The di-ester derivative of claim 56, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $\text{C}_2\text{--C}_6$ alkenyl.

81. (Currently Amended) $[[\text{The}]]$ The di-ester derivative of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $\text{C}_4\text{--C}_{30}$ aryl.

82. (Currently Amended) The di-ester derivative of claim 56, wherein each of R_1 , R_2 and R_3 is H, R_4 is $[[\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3]]$ $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $\text{C}_4\text{--C}_{20}$ aryl.

83. (Currently Amended) The di-ester derivative of claim 55, wherein each of R_1 , R_2 and R_3 is H, R_4 is $\text{Si}(\text{CH}_3)_2\text{C}(\text{CH}_3)_3$, and R is $(\text{CH}_2)_n\text{OR}_5$;

wherein,

R₅ is C₁–C₆ alkyl[[.]] or C₂–C₆ alkenyl [[, or C₄–C₁₀ aryl]], and
n is 1 or 2.

84. (Previously Presented) The di-ester derivative of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is (CH₂)_nSR₅,

wherein,

R₅ is C₁–C₆ alkyl, C₂–C₆ alkenyl, or C₄–C₁₀ aryl, and
n is 1 or 2.

85. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is (CH₂)_nNR₅R₆,

wherein,

R₅ and R₆ are independently, C₁–C₆ alkyl[[.]] or C₂–C₆ alkenyl [[, or C₄–C₁₀ aryl]], and n is 1 or 2.

86. (Previously Presented) The di-ester of claim 55, wherein each of R₁, R₂ and R₃ is H, R₄ is Si(CH₃)₂C(CH₃)₃, and R is CH₂)_nCOR₇,

wherein,

R₇ is hydroxy, C₁–C₆ alkyl, C₂–C₆ alkenyl, or C₄–C₁₀ aryl, and
n is 2 to 4.

87. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein R₁ is CH₂N(CH₃)₂, each of R₂, R₃ and R₄ is H, and R is [[C₁–C₃₀]] C₂–C₃₀ alkyl.

88. (Currently Amended) The di-ester derivative of claim 56 or a salt thereof, wherein R₁ is CH₂N(CH₃)₂, each of R₂, R₃ and R₄ is H, and R is [[C₁–C₂₀]] C₂–C₂₀ alkyl.

89. (Previously Presented) The di-ester derivative of claim 55 or a salt thereof, wherein R₁ is CH₂N(CH₃)₂, each of R₂, R₃ and R₄ is H, and R is C₂–C₂₂ alkenyl.

90. (Previously Presented) The di-ester derivative of claim 56 or a salt thereof, wherein R₁ is CH₂N(CH₃)₂, each of R₂, R₃ and R₄ is H, and R is C₂–C₆ alkenyl.

91. (Previously Presented) The di-ester derivative of claim 55 or a salt thereof, wherein R₁ is CH₂N(CH₃)₂, each of R₂, R₃ and R₄ is H, and R is C₄–C₃₀ aryl.

92. (Previously Presented) The di-ester derivative of claim 56 or a salt thereof, wherein R_1 is $CH_2N(CH_3)_2$, each of R_2 , R_3 and R_4 is H, and R is C_4 - C_{20} aryl.

93. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein R_1 is $CH_2N(CH_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(CH_2)_nOR_5$,

wherein,

R_5 is C_1 - C_6 alkyl[[.]] or C_2 - C_6 alkenyl [[, or C_4 - C_{10} aryl]], and
n is 1 or 2.

94. (Previously Presented) The di-ester derivative of claim 55 or a salt thereof, wherein R_1 is $CH_2N(CH_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(CH_2)_nSR_5$,

wherein,

R_5 is C_1 - C_6 alkyl, C_2 - C_6 alkenyl, or C_4 - C_{10} aryl, and
n is 1 or 2.

95. (Currently Amended) The di-ester derivative of claim 55 or a salt thereof, wherein R_1 is $CH_2N(CH_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(CH_2)_nNR_5R_6$,

wherein,

R_5 and R_6 are independently, C_1 - C_6 C_1 - C_6 alkyl[[.]] or C_2 - C_6 alkenyl [[, or C_4 - C_{10} aryl]], and n is 1 or 2.

96. (Previously Presented) The di-ester derivative of claim 55 or a salt thereof, wherein R_1 is $CH_2N(CH_3)_2$, each of R_2 , R_3 and R_4 is H, and R is $(CH_2)_nCOR_7$,

wherein,

R_7 is hydroxy, C_1 - C_6 alkyl, C_2 - C_6 alkenyl, or C_4 - C_{10} aryl, and
n is 2 to 4.

97. (Currently Amended) A method of inhibiting [[to inhibit]] the enzyme topoisomerase I in an animal in need thereof comprising administering to the animal an effective amount of a composition comprising at least one di-ester derivative of claim 55.

98. (Currently Amended) A method of inhibiting [[to inhibit]] the enzyme topoisomerase I in an animal in need thereof comprising administering to the animal an effective amount of a composition comprising at least one di-ester derivative of claim 56.

99. (Currently Amended) A method of treating [[to treat]] cancer in a patient comprising administering a composition comprising at least one di-ester derivative of claim 55 to said patient in an effective amount to treat said cancer.

100. (Currently Amended) A method of treating [[to treat]] cancer in a patient comprising administering a composition comprising at least one di-ester derivative of claim 56 to said patient in an effective amount to treat said cancer.

101. (Previously Presented) The method of claim 99, wherein said cancer is lung, breast, colon, prostate, melanoma, pancreas, stomach, liver, brain, kidney, uterus, cervix, ovaries, urinary tract, gastrointestinal, or leukemia.

102. (Previously Presented) The method of claim 100, wherein said cancer is lung, breast, colon, prostate, melanoma, pancreas, stomach, liver, brain, kidney, uterus, cervix, ovaries, urinary tract, gastrointestinal, or leukemia.

103. (Previously Presented) The method of claim 99, wherein said cancer is solid tumor or blood borne tumor.

104. (Previously Presented) The method of claim 100, wherein said cancer is solid tumor or blood borne tumor.

105. (Previously Presented) The method of claim 99, wherein said composition is administered orally, parenterally, intramuscularly, transdermally or by an airborne delivery system.

106. (Previously Presented) The method of claim 100, wherein said composition is administered orally, parenterally, intramuscularly, transdermally or by an airborne delivery system.

107. (Previously Presented) The method of claim 99, wherein said composition is a nanoparticle containing said at least one di-ester of camptothecin.

108. (Previously Presented) The method of claim 100, wherein said composition is a nanoparticle containing said at least one di-ester of camptothecin.